

Ahmedabad-based researcher develops novel formulation for tinnitus that targets brain pathways

Dr Sanjay Agrawal has developed a novel formulation aimed at addressing changes in auditory processing as well as factors associated with the emotional and perceptual experience of tinnitus

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Scientific researcher and pharmaceutical consultant Dr Sanjay Agrawal, who reportedly holds 42 patents for drug formulations, has developed a new formulation for tinnitus.

He stated that the new formulation is designed to address the neuroplastic changes and emotional amplification mechanisms that underlie tinnitus. By targeting both peripheral damage and central compensation, it holds promise for reducing the phantom sound perception and associated distress.

Tinnitus often stems from cochlear damage and loss of sensory hair cells, leading to reduced auditory input. The brain compensates through neuroplastic changes, increasing spontaneous activity in the auditory cortex. Emotional and attentional centres like the limbic system and prefrontal cortex further amplify the distress.

Current pharmacological treatments focus on managing associated symptoms rather than eliminating tinnitus itself. Antidepressants like amitriptyline and nortriptyline, SSRIs, benzodiazepines (clonazepam, alprazolam), anticonvulsants (gabapentin, carbamazepine), melatonin, and zinc supplementation have all been explored, though most are used off-label and show variable efficacy.

Non-drug interventions are increasingly favored. Cognitive Behavioral Therapy (CBT), Tinnitus Retraining Therapy (TRT), sound therapy, hearing aids, mindfulness, relaxation techniques, and repetitive transcranial magnetic stimulation (rTMS) are among the most effective strategies for reducing perception and improving quality of life.

International health bodies advocate a multidisciplinary, patient-centred approach. CBT, sound therapy, and education are recommended as first-line treatments, while routine pharmacological intervention is discouraged. Guidelines from the American Academy of Otolaryngology–Head and Neck Surgery (AAO-HNS), the UK's NICE, and European associations emphasize early diagnosis and psychological support. The World Health Organization (WHO) also underscores prevention through noise control and cautious use of ototoxic drugs.

Dr Agrawal's formulation aligns with efforts to move beyond symptomatic relief by targeting the neurological mechanisms associated with tinnitus, including its auditory and emotional pathways.